Gas-filled Magnet as Preseparator for Chemistry

A. Popeko, O. Malyshev, A. Yeremin

Velocities, E/q and ranges in He

$^{48}Ca+^{238}U \rightarrow ^{282}112$

	E(MeV)	Velocity (cm/ns)	E/<q> (MV)	Range (mm)
$^{282}112$	24.5	0.41	1.64	32.2
$^{282}112$	31.1	0.46	1.86	39.7
$^{282}112$	37.7	0.51	2.06	46.8
^{48}Ca	230	3.02	13.29	430
^{238}U	125	1.00	4.12	101.3

$^{22}Ne+^{248}Cm \rightarrow ^{266}106$

	E(MeV)	Velocity (cm/ns)	E/<q> (MV)	Range (mm)
$^{266}106$	9.5	0.26	1.01	14.2
^{22}Ne	116	3.17	12.2	640
^{248}Cm	35	0.52	2.03	43.8

$^{58}Fe+^{208}Pb \rightarrow ^{265}108$

	E(MeV)	Velocity (cm/ns)	E/<q> (MV)	Range (mm)
$^{265}108$	63	0.67	2.68	67.6
^{58}Fe	290	3.08	13.8	400
^{208}Pb	200	1.35	5.06	133.6

Average charges and magnetic rigidities

$^{48}Ca+^{238}U \rightarrow ^{282}112$

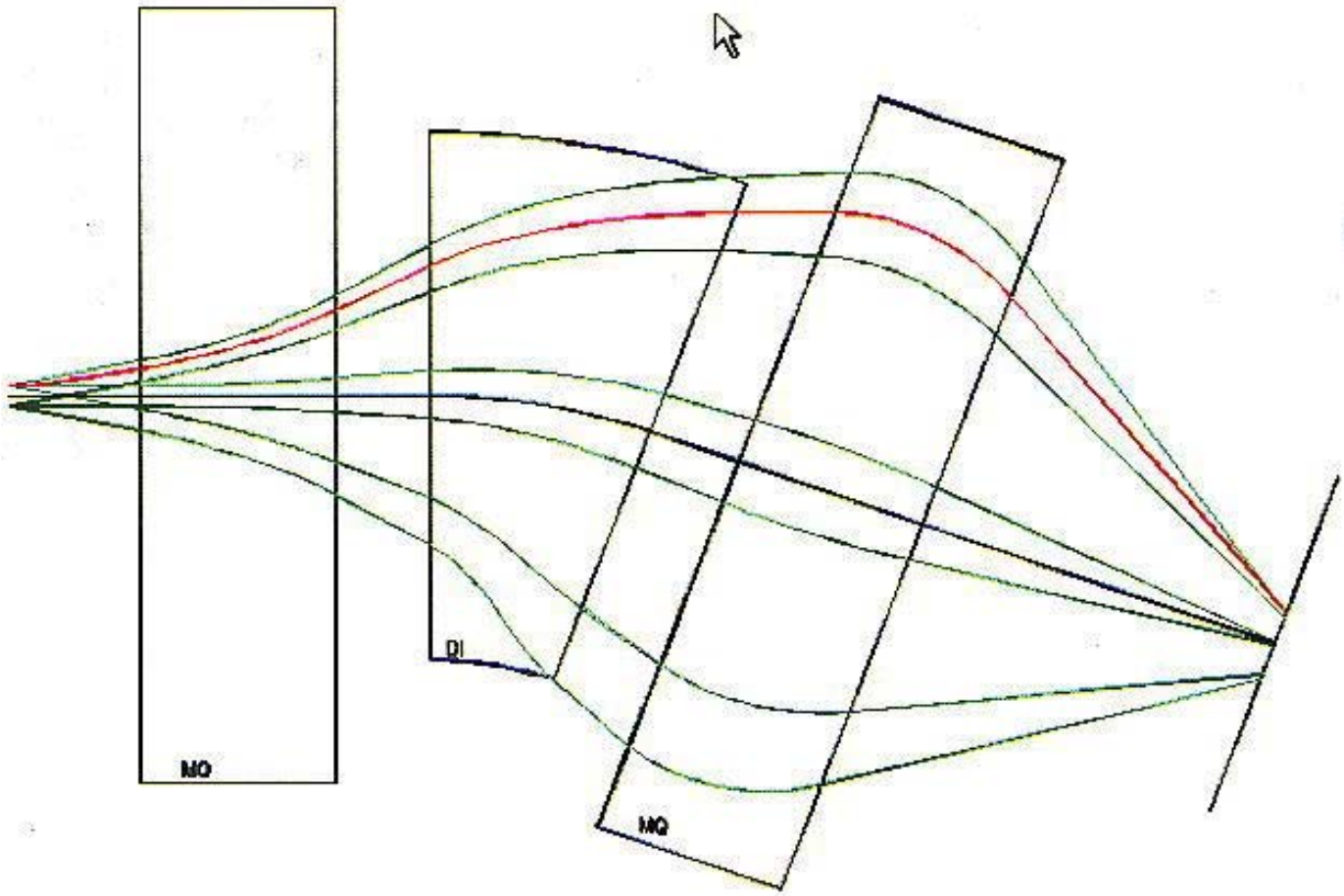
	E(MeV)	He		H_2		C	
		<q>	Bρ(T*m)	<q>	Bρ(T*m)	<q>	Bρ(T*m)
$^{282}112$	24.5	6.10	1.96	5.18	2.31	14.9	0.80
$^{282}112$	31.1	6.92	1.95	6.09	2.21	16.7	0.81
$^{282}112$	37.7	7.70	1.93	7.0	2.13	18.3	0.81
^{48}Ca	230	16.2	0.93	16.2	0.93	17.3	0.87
^{238}U	125	15.1	1.65	16.6	1.48	30.3	0.82

$^{22}Ne+^{248}Cm \rightarrow ^{266}106$

	E(MeV)	He		H_2		C	
		<q>	Bρ(T*m)	<q>	Bρ(T*m)	<q>	Bρ(T*m)
$^{266}106$	9.5	3.97	1.82	2.91	2.49	9.38	0.77
^{22}Ne	116	9.39	0.77	9.39	0.77	9.50	0.76
^{248}Cm	35	7.02	1.90	6.5	2.05	17.2	0.78

$^{58}Fe+^{208}Pb \rightarrow ^{265}108$

	E(MeV)	He		H_2		C	
		<q>	Bρ(T*m)	<q>	Bρ(T*m)	<q>	Bρ(T*m)
$^{265}108$	63	10.5	1.77	10.3	1.80	23.5	0.79
^{58}Fe	290	19.7	0.95	19.7	0.95	22.0	0.85
^{208}Pb	200	20.4	1.44	24.8	1.18	35.7	0.82


MQ
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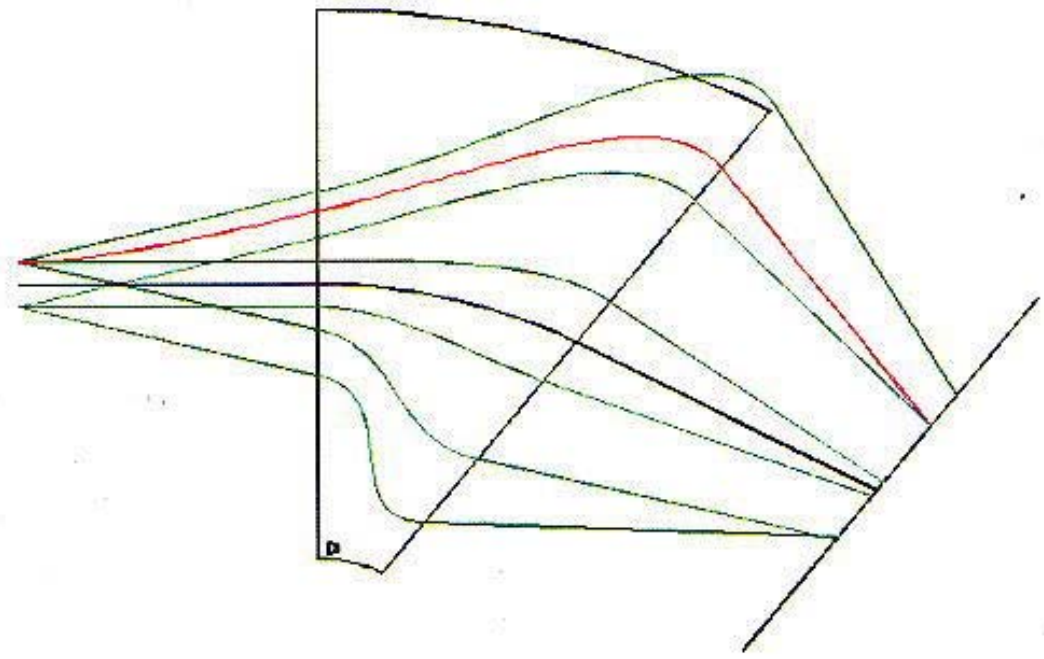
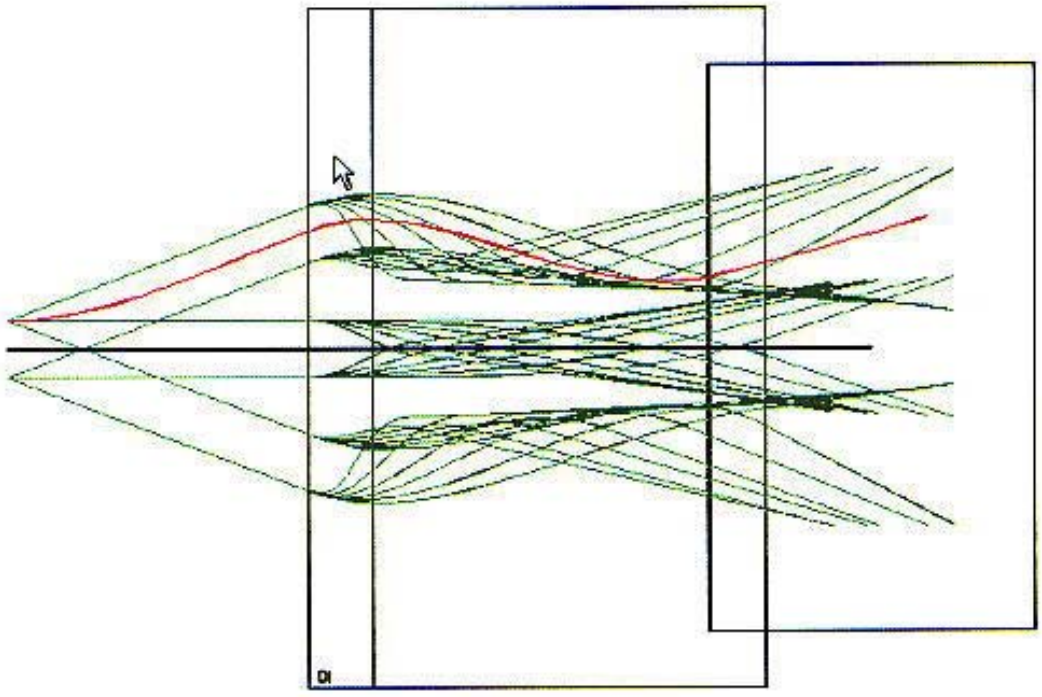


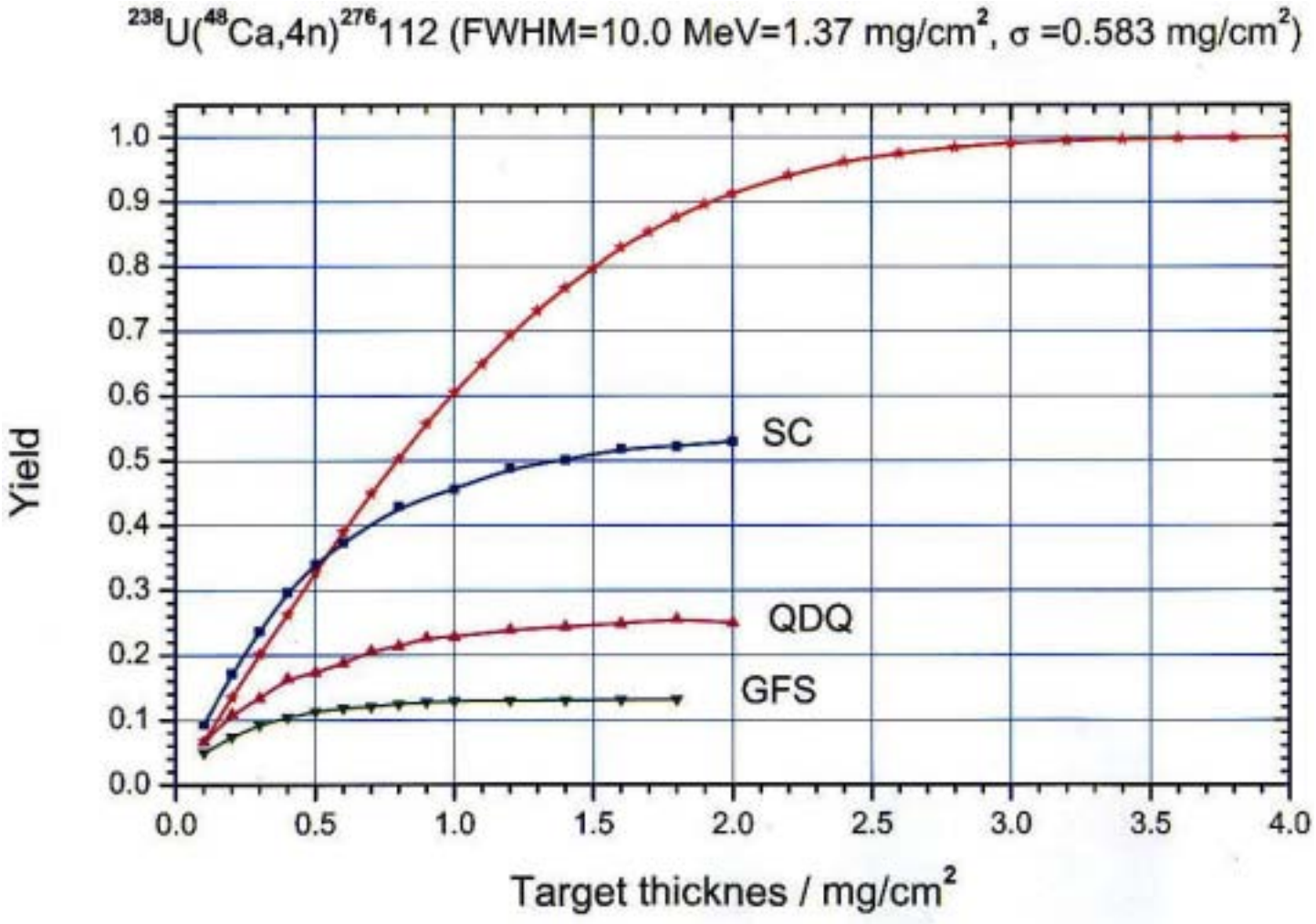


$\alpha = 32.9^{o}$

$R_o = 0.800$ m

$\beta_{inp} = +65.9^{o}$

$\beta_{out} = -60.2^{o}$


$^{238}U(^{48}Ca,4n)^{276}112$ (FWHM=10.0 MeV=1.37 mg/cm^2, σ =0.583 mg/cm^2)
Yield
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
SC
QDQ
GFS
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Target thicknes / mg/cm^2